



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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April 25, 2000

Lon Thomas
Star Stone Quarries, Inc.
4040 South 300 West
Salt Lake City, Utah 84107

Re: Third Review of Notice of Intention to Commence Large Mining Operations, American Stone, Inc., Cotton Thomas Quarry, M/003/024, Box Elder County, Utah

Dear Mr. Thomas:

The Division has completed a review of your February 29, 2000 draft response to the Division's January 5, 2000 review of your Notice of Intention to Commence Large Mining Operations (NOI) for the Cotton Thomas Quarry, located in Box Elder County, Utah. After reviewing the information, the Division has the following comments which will need to be addressed before tentative approval may be granted. The comments are listed below under the applicable Minerals Rule heading. Please format your response in a similar fashion.

Please, address only the remaining technical review comments in your response and avoid revising other sections of the permit application to the extent possible. Continued changes and additions to proposed mining and reclamation plans will only further delay our final approval of the permit application. We are very anxious to complete the permitting process for this operation and cannot do so if the proposed plans keep changing following each subsequent review of the application. If this pattern continues, it may be construed that an intentional delay is occurring, which may force us to reinstate the suspended enforcement action on this site.

The Division will suspend further review of the Cotton Thomas Quarry permit application until your response to this letter is received. If possible, please provide a response to this review no later than May 19, 2000. If you have any questions in this regard, please contact me, Lynn Kunzler, or Doug Jensen of the Minerals Staff. If you wish to arrange a meeting to sit down and discuss this review, please contact us at your earliest convenience. Thank you for your cooperation in completing this permitting action.

Sincerely,

D. Wayne Hedberg
Permit Supervisor
Minerals Regulatory Program

jb

Attachment: Review & DOGM Surety Estimate

cc: Mary Ann Wright, DOGM

Michael Ford, BLM

review\m03-24 2-29-00.rvw

REVIEW OF NOTICE OF INTENTION TO COMMENCE LARGE MINING OPERATIONS

American Stone, Inc.
Cotton Thomas Quarry
(April 25, 2000)
M/003/024

R647-4-105 - Maps, Drawings & Photographs

105.2 *Surface facilities map*

Map #4 legend needs to be corrected to show the correct acreage of 66.32 acres affected by this operation. (LK)

The NOI refers to a proposed access road to the north of the operations area of 4.7 miles in length (new construction) and 0.9 miles of improved road (Map 4.1). Since the operator has yet to secure the necessary right-of-way, this will need to be amended to the plan at a later date. This proposed access route is *not* included as part of this review. (LK)

105.3 *Drawings or Cross Sections (slopes, roads, pads, etc.)*

The text states map #7 describes the acreage to be reclaimed as 35.68 acres with the total area to be developed (affected) as 54.08 acres. This implies variances for 18.4 acres. However, the Division's review of the permit shows 66.32 acres to be developed (affected) by this permit. Reclamation will be required on 55.6 acres and variances from reclamation will be approved for 10.72 acres. (DJ & LK)

R647-4-106 - Operation Plan

106.6 *Plan for protecting & redepositing soils*

Map #4 shows quarry areas from which topsoil can be salvaged. Approximately 6,225 cubic yards of soil will be salvaged from the 15.43 acres identified. An additional 2,680 cu. yds. will be borrowed from the camp area. This will provide an average of two (2) inches of topsoil for all quarry areas. Maps 6.1-6.12 show locations for topsoil stockpiles. Inactive stockpiles will be seeded to stabilize soil materials. Upon redistribution of these soils, it will be necessary to amend the soils with a minimum of 10 ton per acre of composted manure. No other fertilizer or amendments are expected to be necessary. Please revise the plan to reflect this change. (LK)

This comment was not addressed in the February 29, 2000 submittal. (LK)

R647-4-110 - Reclamation Plan

110.5 *Revegetation Planting program*

The February 29, 2000 submittal includes a proposed seed mix for final reclamation that includes only six grass species and one forb. This seed mix may be used for topsoil stockpile stabilization only. It is not acceptable for final reclamation, inasmuch as it is not expected to provide a permanent and diverse vegetation community capable of supporting the intended post mining land use. Please plan to use the previously approved seed mix (included on page 20 of your February 29, 2000 submittal). (LK)

R647-4-112 - Variance

A variance was requested from Rule R647-4-107.5 - Topsoil Salvage. Map #4 shows quarry areas from which the operator feels topsoil can be salvaged (three inch depth). In addition, a proposed borrow area at

the camp site (one foot depth) will provide sufficient topsoil material to cover quarry and dump areas at a depth of two inches. This, coupled with a soil amendment of 10 ton per acre of composted manure over the regraded 'fines' is expected to provide an adequate seedbed for successful revegetation. This variance *is approved* for quarry areas identified on Map #4 where topsoil is not planned for salvage. (LK)

A variance was requested from Rule R647-4-111.7 Highwall reduction. This variance was previously *approved* by the Division to leave a 12-foot highwall at the Autumn Gold Quarry. (LK)

A variance was requested from Rule R647-4-111.8 - Reclamation of all roads. The operator has requested that several roads remain for post mining land use in conjunction with his ranching operation for the area. In reviewing this request, the Division considered reasonable access to the property in evaluating each road segment requested. This has resulted in three segments being acceptable for the post mining land use. The requested variance to leave the roads from the camp to the Autumn Gold quarry, from the Autumn Gold quarry to the Buckskin quarry, and from the Buckskin Quarry to the camp *is approved*. The requested variance to leave the roads to the Windridge Rubble quarry and the proposed extension to Mahogany Creek; the road from the Klondike Gold to the Star Quarry; the road between the camp and the Antique White quarry; the road connecting the Autumn Gold, Klondike Gold, and Aspen Frost quarries; and the roads from the Buckskin Quarry to the North, East, West and South Granite quarries is *not approved*. (LK)

The operator states that it is his understanding that casual use of the property is allowed without the requirement for bonding, and provides a definition of "casual use" from the BLM. The Division does not make a distinction of casual use. All areas affected by mining related activities *will require* appropriate bonding. However, the "casual use" areas, as identified, will not require as extensive of reclamation as other areas of the operation. As described, reclamation of the "casual use" areas will likely only require ripping to eliminate any surface compaction followed by seeding. (LK)

R647-4-113 - Surety

The Division has prepared a revised reclamation surety estimate using the estimate provided in this submission and using the information in the text description of reclamation. The Division's estimate is divided into estimates for the individual quarries, or group of quarries, and roads in the same manner as the submission. The Division surety has been corrected to reflect the clean-up cost reflected in the Klondike Gold quarry calculation. The amount of the surety requested remains at \$106,000 for these operations. This reclamation surety will be reviewed in five years (the end of the calendar year 2004), unless the plan is modified. A copy of the Division estimate is enclosed. This estimate includes an exclusion for the areas that have approved variances in the present plan.

The Division's estimate includes regrading of waste dump fines onto a portion of the quarry excavation to provide a 16 inch depth of fines. This task replaced the waste dump slope regrading line item in the submission estimate. The Division's estimate includes placement of a minimum of two inches of topsoil over the quarry disturbance with 70% of this topsoil coming from stockpiles adjacent to the quarry and 30% of this topsoil being hauled from the borrow area using a truck and front end loader. The Division's estimate includes ripping and broadcast seeding of areas of surface rock removal described in the submission as "casual use." The Division's estimate substitutes composted manure in place of diammonium phosphate fertilizer. (DJ)

Means 1999, 010-036-0180, project manager, minimum \$1,860/wk

RECLAMATION SURETY ESTIMATE

THOMAS AMERICAN STONE

Cotton Thomas Operations

M/003/024

last revision

24-Apr-2000

filename m03-24.wb3

page "3 Qs"

Box Elder County

Prepared by Utah State Division of Oil, Gas & Mining

RECLAMATION TASKS AT THE ANTIQUE WHITE, LITTLE HEART & WINDRIDGE RUBBLE
ACCESS ROADS ARE NOT INCLUDED IN THIS CALCULATION PAGE.

This page includes reclamation of 0.87 +0.80 acres of surface rock removal listed as "casual use."

Reclamation of surface rock removal areas will include ripping & broadcast seeding.

Reclamation of other areas: 2 inches of topsoil, 10 ton/acre composted manure, broadcast seed.

Equipment mobilization & supervision are included in the summary page only.

Total disturbed area (1.74+1.13+0.87+0.80 +0.25)= 4.79 acres total disturbance

Topsoil coverage for 3.74 acres requiring topsoil

Calculated soil volume for minimum cover 2 inch depth => 1,005.6 CY

Calculated waste fines for 16" cover on 50% excavation area=> 4,022.6 CY

Assumed 30% of calculated topsoil volume is from the camp borrow site & 70% at the quarry.

Dump regrading assumed as moving volume of fines to cover quarry excavation with 16 inch dept

-Amount of disturbed area which will receive reclamation treatments = 4.8 acres

-Estimated total disturbed area for this mine = 4.8 acres

Activity	Quantity	Units	\$/unit	\$	Note
Regrading waste dump fines onto quarry	4,023	CY	0.82	3,299	(1)
Ripping waste dump tops - (50% topsoil area)	1.87	acre	220	411	(2)
Ripping surface rock removal areas	1.05	acre	220	231	(2)
Topsoil spreading - dozer(70% total vol)	704	CY	0.64	451	(3)
Topsoil haulage - truck & FE loader(30%)	302	CY	3.47	1,047	(4)
Composted manure (10 ton/acre)	3.74	acre	300	1,122	(01)
Broadcast seeding	4.79	acre	170	814	(02)
General site cleanup & trash removal (50% total area)	2.40	acre	50	120	(03)
Subtotal				\$7,494	
Average cost per disturbed acre =		\$1,565			

Note

- (1) Means 1999 & Blue Book 3Q/99: Cat D8N, U, mtl 2550 lb/CY, 200 ft push
- (2) Means 1999 & Blue Book 3Q/99: Cat D8N, U, multi shank rippers, speed 1.0 mph
- (2) Means 1999 & Blue Book 3Q/99: Cat D8N, U, multi shank rippers, speed 1.0 mph
- (3) Means 1999 & Blue Book 3Q/99: Cat D8N, U, mtl 2550 lb/CY, 150 ft push
- (4) Means 1999 022-266-2040: hauling excavated or borrow material, off highway hauler, 22 CY, 2 mi roun
- (01) DOGM general estimate - manure \$16/ton delivered, \$14 ton/acre spreading
- (02) DOGM general estimate - broadcast seeding
- (03) DOGM general estimate - site cleanup & trash removal

1	RECLAMATION SURETY ESTIMATE				
2	THOMAS AMERICAN STONE		last revision	24-Apr-2000	
3	Cotton Thomas Operations		filename m03-24.wb3	page "4_granite_Qs"	
4	M/003/024		Box Elder County		
5	Prepared by Utah State Division of Oil, Gas & Mining				
6	THIS PAGE IS FOR RECLAMATION TASKS AT THE N, W, S & EAST GRANITE QUARRIES.				
7	ACCESS ROADS ARE NOT INCLUDED IN THIS CALCULATION PAGE.				
8	This page includes reclamation of 0.00 acres of surface rock removal listed as "casual use."				
9	Reclamation of surface rock removal areas will include ripping & broadcast seeding.				
10	Reclamation of other areas: 2 inches of topsoil, 10 ton/acre composted manure, broadcast see				
11	Equipment mobilization & supervision are included in the summary page only..				
12	Total disturbed area (3.52+0.47+0.40+2.12) =	6.51	acres total disturbance		
13	Topsoil coverage for	6.51	acres requiring topsoil		
14	Calculated soil volume for minimum cov	2 inch depth =>	1,750.5	CY	
15	Calculated waste fines for 16" cover on	10% excavation area=>	1,400.4	CY	
16	Assumed 30% of calculated topsoil volume is from the camp borrow site & 70% at the quarry.				
17	Dump regrading assumed as moving volume of fines to cover quarry excavation with 16 inch d				
18	-Amount of disturbed area which will receive reclamation treatment	6.5	acres		
19	-Estimated total disturbed area for this mine =	6.5	acres		
20	<u>Activity</u>	<u>Quantity</u>	<u>Units</u>	<u>\$/unit</u>	<u>\$</u>
21	Regrading waste dump fines onto quarry	1,400	CY	0.82	1,148
22	Ripping waste dump tops - (50% topsoil area)	3.26	acre	220	716
23					
24	Ripping casual use stone removal area	0.00	acre	220	0
25					
26	Topsoil spreading - dozer (70% total vol)	1,225	CY	0.64	784
27	Topsoil haulage - truck & FE loader(30%)	525	CY	3.47	1,822
28					
29	Composted manure (10 ton/acre)	6.51	acre	300	1,953
30	Broadcast seeding	6.51	acre	170	1,107
31					
32	General site cleanup & trash removal(50% total are	3.26	acre	50	163
33					
34			Subtotal		\$7,693
35	Average cost per disturbed acre =	\$1,182			
Note					
(1)	Means 1999 & Blue Book 3Q/99: Cat D8N, U, mtl 2550 lb/CY, 200 ft push				
(2)	Means 1999 & Blue Book 3Q/99: Cat D8N, U, multi shank rippers, speed 1.0 mph				
(2)	Means 1999 & Blue Book 3Q/99: Cat D8N, U, multi shank rippers, speed 1.0 mph				
(3)	Means 1999 & Blue Book 3Q/99: Cat D8N, U, mtl 2550 lb/CY, 150 ft push				
(4)	Means 1999 022-266-2040: hauling excavated or borrow material, off highway hauler, 22 CY,				
	2 mi round trip, no loading included \$3.01/CY + DOGM FE load cost \$0.46/CY				
(01)	DOGM general estimate - manure \$16/ton delivered, \$14 ton/acre spreading				
(02)	DOGM general estimate - broadcast seeding				
(03)	DOGM general estimate - site cleanup & trash removal				

RECLAMATION SURETY ESTIMATE

THOMAS AMERICAN STONE

Cotton Thomas Operations

M/003/024

Prepared by Utah State Division of Oil, Gas & Mining

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page "buckskin"

Box Elder County

THIS PAGE IS FOR RECLAMATION TASKS AT THE BUCKSKIN QUARRY ONLY.

ACCESS ROADS ARE NOT INCLUDED IN THIS CALCULATION PAGE.

This page includes reclamation of 0.00 acres of surface rock removal listed as "casual use."

Reclamation of other areas: 2 inches of topsoil, 10 ton/acre composted manure, broadcast seed.

Equipment mobilization & supervision are included in the summary page only.

Total disturbed area = 3.91 acres total disturbance

Topsoil coverage for 3.91 acres requiring topsoil

Calculated soil volume for minimum cover 2 inch depth => 1,051.4 CY

Calculated waste fines for 16" cover on 50% excavation area=> 4,205.4 CY

Assumed 30% of calculated topsoil volume is from the camp borrow site & 70% at the quarry.

Dump regrading assumed as moving volume of fines to cover quarry excavation with 16 inch depth.

-Amount of disturbed area which will receive reclamation treatments = 3.9 acres

-Estimated total disturbed area for this mine = 3.9 acres

Activity	Quantity	Units	\$/unit	\$	Note
Regrading waste dump fines onto quarry	4,205	CY	0.82	3,448	(1)
Ripping waste dump tops - (50% topsoil area)	1.96	acre	220	430	(2)
Ripping casual use stone removal area	0.00	acre	220	0	(2)
Topsoil spreading - dozer (70% total volume)	736	CY	0.64	471	(3)
Topsoil replacement - truck & FE loader(30%)	315	CY	3.47	1,094	(4)
Composted manure (10 ton/acre)	3.91	acre	300	1,173	(01)
Broadcast seeding	3.91	acre	170	665	(02)
General site cleanup & trash removal (50% total area)	1.96	acre	50	98	(03)
Subtotal				\$7,379	
Average cost per disturbed acre =		\$1,887			

Note

- (1) Means 1999 & Blue Book 3Q/99: Cat D8N, U, mtl 2550 lb/CY, 200 ft push
- (2) Means 1999 & Blue Book 3Q/99: Cat D8N, U, multi shank rippers, speed 1.0 mph
- (2) Means 1999 & Blue Book 3Q/99: Cat D8N, U, multi shank rippers, speed 1.0 mph
- (3) Means 1999 & Blue Book 3Q/99: Cat D8N, U, mtl 2550 lb/CY, 150 ft push
- (4) Means 1999 022-266-2040: hauling excavated or borrow material, off highway hauler, 22 CY, 2 mi round trip, no loading included \$3.01/CY + DOGM FE load cost \$0.46/CY
- (01) DOGM general estimate - manure \$16/ton delivered, \$14 ton/acre spreading
- (02) DOGM general estimate - broadcast seeding
- (03) DOGM general estimate - site cleanup & trash removal

RECLAMATION SURETY ESTIMATE

THOMAS AMERICAN STONE

Cotton Thomas Operations

M/003/024

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page "autumn gold"

Box Elder County

THIS PAGE IS FOR RECLAMATION TASKS AT THE AUTUMN GOLD QUARRY ONLY.
ACCESS ROADS ARE NOT INCLUDED IN THIS CALCULATION PAGE.

This page includes reclamation of 6.1 acres of surface rock removal listed as "casual use."

Reclamation of surface rock removal areas will include ripping & broadcast seeding.

Reclamation of other areas: 2 inches of topsoil, 10 ton/acre composted manure, broadcast seed.

Equipment mobilization & supervision are included in the summary page only.

Total disturbed area (10.7 + 6.1) = 16.8 acres total disturbance

Topsoil coverage for 10.7 acres requiring topsoil

Calculated soil volume for minimum cover 2 inch depth => 2,877.1 CY

Calculated waste fines for 16" cover on 50% excavation area=> 11,508.4 CY

Assumed 30% of calculated topsoil volume is from the camp borrow site & 70% at the quarry.

Dump regrading assumed as moving volume of fines to cover quarry excavation with 16 inch dep

Previous variance granted by the Division to allow 12 ft highwalls to remain.

Previous variance granted by the Division did not require topsoil salvage at the quarry excavation

-Amount of disturbed area which will receive reclamation treatments 16.8 acres

-Estimated total disturbed area for this mine = 16.8 acres

Activity	Quantity	Units	\$/unit	\$	Note
Regrading waste dump fines onto quarry	11,508	CY	0.82	9,437	(1)
Ripping waste dump tops - (50% topsoil area)	5.4	acre	220	1,177	(2)
Ripping surface rock removal area	6.1	acre	220	1,342	(2)
Topsoil spreading- dozer (70% total vol)	2,014	CY	0.64	1,289	(3)
Topsoil haulage - truck & FE loader (30%)	863	CY	3.47	2,995	(4)
Composted manure (10 ton/acre)	10.7	acre	300	3,210	(01)
Broadcast seeding	16.8	acre	170	2,856	(02)
General site cleanup & trash removal (50% total area)	8.4	acre	50	420	(03)
Subtotal				\$22,726	
Average cost per disturbed acre =		\$1,353			

Note

- (1) Means 1999 & Blue Book 3Q/99: Cat D8N, U, mtl 2550 lb/CY, 200 ft push
- (2) Means 1999 & Blue Book 3Q/99: Cat D8N, U, multi shank rippers, speed 1.0 mph
- (2) Means 1999 & Blue Book 3Q/99: Cat D8N, U, multi shank rippers, speed 1.0 mph
- (3) Means 1999 & Blue Book 3Q/99: Cat D8N, U, mtl 2550 lb/CY, 150 ft push
- (4) Means 1999 022-266-2040: hauling excavated or borrow material, off highway hauler, 22 CY, 2 mi round trip, no loading included \$3.01/CY + DOGM FE load cost \$0.46/CY
- (01) DOGM general estimate - manure \$16/ton delivered, \$14 ton/acre spreading
- (02) DOGM general estimate - broadcast seeding
- (03) DOGM general estimate - site cleanup & trash removal

RECLAMATION SURETY ESTIMATE

THOMAS AMERICAN STONE

Cotton Thomas Operations

M/003/024

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page "cotton roads"

Box Elder County

Prepared by Utah State Division of Oil, Gas & Mining

THIS PAGE IS FOR RECLAMATION TASKS FOR ACCESS ROADS ONLY

Road disturbances to receive 5 ton/acre of composted manure.

Road disturbances will not receive additional topsoil placement.

Equipment mobilization & supervision are included in the summary page only.

Road reclamation includes ripping or regrading, composted manure & seeding unless stated otherwise

Approximately 1.0 mile x 16 ft road (1.93 acre) is expected to require trackhoe regrading.

ROAD DESCRIPTION

mileage width(ft) acreage variance

to Little Heart Quarry	0.17	16	0.33	no
to Aspen Frost Quarry	0.23	16	0.45	no
from Camp to Antique White Quarry	0.37	14	0.63	no
to Windridge Quarry	0.56	16	1.09	no
from Camp to Klondike Gold Quarry	0.73	14	1.24	no
from Camp to Klondike Gold Quarry	0.96	16	1.86	no
from Buckskin Quarry to West Granite Quarry	1.06	16	2.06	no
to East Granite Quarry	1.09	18	2.38	2.38
from Autumn Gold Quarry to Buckskin Quarry	1.21	17	2.49	2.49
to Buckskin Quarry	1.73	20	4.19	4.19
Antique White Quarry to Autumn Gold Quarry	1.00	18	2.18	no
beyond North Granite Quarry	0.19	16	0.37	no
between Klondike Gold & Star Quarry (unapproved)	0.83	20	2.01	no
proposed between Buckskin & N Granite (along ridg	1.22	18	2.66	no
proposed from Windridge to Mahogany Draw	0.4	16	0.78	no

Total road disturbance	24.71	
Road disturbance granted a variance from reclamation		9.06
Road disturbance being reclaimed	15.65	
Road disturbance requiring trackhoe work	1.93	
Road disturbance requiring dozer ripping	13.72	

-Amount of road disturbance which will receive reclamation treatments 13.72 acres

-Estimated total road disturbed area for this mine = 24.71 acres

Activity	Quantity	Units	\$/unit	\$	Note
Ripping access roads - dozer	13.72	acre	220	3,019	(2)
Regrading access roads - dozer	0.00	acre	470	0	(5)
Sidecast mtl replacement on steep roads- trackhoe	5,280	LF	1.07	5,650	(6)
Composted manure - roads (5 ton/acre)	15.65	acre	150	2,348	(04)
Broadcast seeding	15.65	acre	170	2,661	(02)
General site cleanup & trash removal (50% total area)	12.36	acre	50	618	(03)
		Subtotal		\$14,295	
Average cost per disturbed acre =	\$578				

Note

- (2) Means 1999 & Blue Book 3Q/99: Cat D8N, U, multi shank rippers, speed 1.0 mph
- (5) Means 1999 & Blue Book 4/98: Cat D8N, U, mtl 2550 lb/CY, 50 ft push, 1 ft depth
- (6) Contractor's actual costs, 1991 at E/053/012, Cat 225 Excavator, 20 ft wide road \$0.85/LF cost escalated to 1999 as \$1.07/LF
- (04) DOGM general estimate - manure \$16/ton delivered, \$14 ton/acre spreading
- (02) DOGM general estimate - broadcast seeding
- (03) DOGM general estimate - site cleanup & trash removal

RECLAMATION SURETY ESTIMATE

THOMAS AMERICAN STONE

Cotton Thomas Operations

M/003/024

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page "klondike gold"

Box Elder County

Prepared by Utah State Division of Oil, Gas & Mining

THIS PAGE IS FOR RECLAMATION TASKS AT THE KLONDIKE GOLD QUARRY ONLY.
ACCESS ROADS ARE NOT INCLUDED IN THIS CALCULATION PAGE.

This page includes reclamation of 0.00 acres of surface rock removal listed as "casual use."

Reclamation of surface rock removal areas will include ripping & broadcast seeding.

Reclamation of other areas: min. 2 inches of topsoil, 10 ton/acre composted manure, broadcast se

Equipment mobilization & supervision are included in the summary page only.

Total disturbed area = 2.96 acres of total disturbance

Topsoil coverage for 2.96 acres requiring topsoil

Calculated soil volume for minimum cover 2 inch depth => 795.9 CY

Calculated waste fines for 16" cover on 50% excavation area=> 3,183.6 CY

Assumed 30% of calculated topsoil volume is from the camp borrow site & 70% at the quarry

Dump regrading assumed as moving volume of fines to cover quarry excavation with 16 inch depth

-Amount of disturbed area which will receive reclamation treatments = 2.96 acres

-Estimated total disturbed area for this mine = 2.96 acres

Activity	Quantity	Units	\$/unit	\$	Note
Regrading waste dump fines onto quarry	3,184	CY	0.82	2,611	(1)
Ripping waste dump tops - (50% topsoil area)	1.48	acre	220	326	(2)
Ripping surface rock removal area	0.00	acre	220	0	(2)
Topsoil spreading - dozer (70% total vol)	557	CY	0.64	357	(3)
Topsoil haulage - truck & FE loader (30%)	239	CY	3.47	829	(4)
Composted manure (10 ton/acre)	2.96	acre	300	888	(01)
Broadcast seeding	2.96	acre	170	503	(02)
General site cleanup & trash removal(50% total area)	2.96	acre	50	74	(03)
Subtotal				\$5,587	
Average cost per disturbed acre =			\$1,887		

Note

- (1) Means 1999 & Blue Book 3Q/99: Cat D8N, U, mtl 2550 lb/CY, 200 ft push
- (2) Means 1999 & Blue Book 3Q/99: Cat D8N, U, multi shank rippers, speed 1.0 mph
- (2) Means 1999 & Blue Book 3Q/99: Cat D8N, U, multi shank rippers, speed 1.0 mph
- (3) Means 1999 & Blue Book 3Q/99: Cat D8N, U, mtl 2550 lb/CY, 50 ft push
- (4) Means 1999 022-266-2040: hauling excavated or borrow material, off highway hauler, 22 CY, 2 mi round trip, no loading included \$3.01/CY + DOGM FE load cost \$0.46/CY
- (01) DOGM general estimate - manure \$16/ton delivered, \$14 ton/acre spreading
- (02) DOGM general estimate - broadcast seeding
- (03) DOGM general estimate - site cleanup & trash removal

RECLAMATION SURETY ESTIMATE

THOMAS AMERICAN STONE

Cotton Thomas Operations

M/003/024

last revision

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page "aspen frost"

Box Elder County

Prepared by Utah State Division of Oil, Gas & Mining

THIS PAGE IS FOR RECLAMATION TASKS AT THE ASPEN FROST QUARRY ONLY.
ACCESS ROADS ARE NOT INCLUDED IN THIS CALCULATION PAGE.

This page includes reclamation of 1.7 acres of surface rock removal listed as "casual use."
Reclamation of surface rock removal areas will include ripping & broadcast seeding.

Reclamation of other areas: min. 2 inches topsoil, 10 ton/acre composted manure, broadcast seed.
Equipment mobilization & supervision are included in the summary page only.

Total disturbed area (3.3 + 1.7) = 5.00 acre total disturbance

Topsoil coverage for 3.30 acres requiring topsoil

Calculated soil volume for minimum cover 2 inch depth => 887.3 CY

Calculated waste fines for 16" cover on 25% excavation area=> 1,774.7 CY

Assumed 30% of calculated topsoil volume is from the camp borrow site & 70% at the quarry

Dump regrading assumed as moving volume of fines to cover quarry excavation with 16 inch depth

-Amount of disturbed area which will receive reclamation treatments = 5.0 acres

-Estimated total disturbed area for this mine = 5.0 acres

Activity	Quantity	Units	\$/unit	\$	Note
Regrading waste dump fines onto quarry	1,775	CY	0.82	1,455	(1)
Ripping waste dump tops - (50% topsoil area)	1.7	acre	220	363	(2)
Ripping surface rock removal area	1.7	acre	220	374	(2)
Topsoil spreading - dozer (70% total vol)	621	CY	0.64	398	(3)
Topsoil haulage - truck & FE loader (30%)	266	CY	3.47	924	(4)
Composted manure (10 ton/acre)	3.3	acre	300	990	(01)
Broadcast seeding	5.0	acre	170	850	(02)
General site cleanup & trash removal (50% total area)	2.5	acre	50	125	(03)
Subtotal				\$5,478	
Average cost per disturbed acre =			\$1,096		

Note

- (1) Means 1999 & Blue Book 3Q/99: Cat D8N, U, mtl 2550 lb/CY, 200 ft push
- (2) Means 1999 & Blue Book 3Q/99: Cat D8N, U, multi shank rippers, speed 1.0 mph
- (2) Means 1999 & Blue Book 3Q/99: Cat D8N, U, multi shank rippers, speed 1.0 mph
- (3) Means 1999 & Blue Book 3Q/99: Cat D8N, U, mtl 2550 lb/CY, 150ft push
- (4) Means 1999 022-266-2040: hauling excavated or borrow material, off highway hauler, 22 CY, 2 mi round trip, no loading included \$3.01/CY + DOGM FE load cost \$0.46/CY
- (01) DOGM general estimate - manure \$16/ton delivered, \$14 ton/acre spreading
- (02) DOGM general estimate - broadcast seeding
- (03) DOGM general estimate - site cleanup & trash removal